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REMARKS

This correspondence is in response to the Office Action mailed on March 14, 2007. Claims 1 and 18 have been amended and new claims 40-43 have been added. The amendment and new claims are supported throughout the specification. For example, see Figures 2, 4, 6, and 8; page 6, lines 22-23, and page 7, lines 3-25. No new matter has been added. Applicants submit that in view of the remarks below the claims are in condition for allowance.

I. 102 Rejections

Claims 1, 3-11, 16, 18-24, 26, 27, 29, 30 and 33 were rejected as being anticipated by Sugimoto et al. (US 6,874,910). This rejection is traversed.

Claim 1 is directed at an illumination assembly comprising: a substrate comprising an electrically insulative layer on a first side of the substrate and a *patterned* electrically conductive layer on a second side of the substrate; a plurality of LED dies, each LED die disposed in a via extending through the electrically insulative layer on the first side of the substrate to the patterned electrically conductive layer on the second side of the substrate, wherein each LED die is electrically and thermally connected through the via to the patterned electrically conductive layer on the second side of the substrate. Sugimoto et al. fail to disclose or suggest such an illumination assembly.

In particular, Sugimoto et al. fail to disclose or suggest a substrate comprising an electrically insulative layer on a first side of the substrate and a patterned electrically conductive layer on a second side of the substrate. Sugimoto et al. teach that the LEDs (2) are electrically connected to wiring patterns (8) located adjacent the insulative layer (4) opposite the thermally conductive layer (3). Sugimoto et al. teach that LEDs (2) are electrically connected on their top side via bond wires (9). See Sugimoto et al. at Figures 1-23. Sugimoto et al. do not teach a configuration where the thermally conductive layer (3) is patterned and otherwise configured to conduct electricity. Since Sugimoto et al. fail to disclose or suggest a substrate comprising patterned electrically conductive layer, claim 1 is not anticipated or obvious.

Claims 3-11 and 16 depend on and further limit claim 1, therefore, they are not anticipated for at least the same reasons.

Claim 18 is directed at an illumination apparatus comprising, among other things, a substrate having an electrically insulative layer on a first surface and a patterned electrically conductive layer on a second surface. As discussed above, Sugimoto et al. fail to disclose or suggest a substrate comprising a patterned electrically conductive layer. Accordingly, claim 18 is not anticipated.

Claim 24 depends on and further limits claim 18, therefore, it is not anticipated for at least the same reasons.

Claim 26 is directed at an illumination apparatus comprising: a layer of electrically insulative material; a layer of thermally and electrically conductive material disposed on a bottom surface of the layer of insulative material, the conductive material patterned to form a plurality of adjacent heat spreading elements; a plurality of vias in the insulative material, each via extending through the insulative material to an associated heat spreading element; a plurality of light emitting elements, each light emitting element disposed in one of the plurality of vias, each light emitting element thermally and electrically coupled to the heat spreading element associated with the via. Sugimoto et al. fail to disclose or suggest such an illumination assembly.

In particular, Sugimoto et al. fail to disclose or suggest a conductive material that is patterned to form a plurality of adjacent heat spreading elements. As discussed above, Sugimoto et al. disclose a system wherein the thermally conductive layer (3) is not configured to conduct electricity. Moreover, Sugimoto et al. disclose a system wherein the thermally conductive layer (3) is not patterned to form a plurality of adjacent heat spreading elements. Accordingly, claim 26 is not anticipated.

Claims 27, 29, 30 and 33 depend on and further limit claim 1, therefore, they are not anticipated for at least the same reasons.

II. 103 Rejections

Claims 2, 25, 31, and 32 were rejected as being obvious in over Sugimoto et al. in view of Matsui et al. (US 2003/0052594). Claims 12-15 and 17 were rejected as being obvious over Sugimoto et al. Claims 35-37 and 39 were rejected as being obvious over Wada Kazunobu (FR 2662896) in view of Whitehead (US 5,661,839). These rejections are traversed.

Claims 2, 12-15, and 17 depend on and further limit claim 1, therefore, they are not obvious for at least the reasons claim 1 is not obvious, which are discussed above. Also, Matsui et al. do not cure the deficiencies of Sugimoto et al.

Claim 25 depends on and further limits claim 18, therefore, it is not obvious for at least the reasons claim 18 is not obvious, which are discussed above.

Claims 31 and 32 depend on and further limit claim 26, therefore, they are not obvious for at least the same reasons claim 26 is not obvious, which are discussed above.

Claim 35 is directed at a flexible circuit comprising: a flexible layer of electrically insulative material, wherein the insulative material comprises an at least partially reflective multilayer optical film; a flexible layer of electrically conductive material disposed on a first surface of the insulative material, the conductive material patterned to form a plurality of adjacent heat spreading elements, each heat spreading element having a first electrical connection pad and a second electrical connection pad; a plurality of mounting vias extending through the insulative material, wherein each mounting via exposes the first electrical connection pad of an associated heat spreading element. Neither Wada Kazunobu nor Whitehead, alone or together, disclose or suggest such an circuit.

In particular, both Wada Kazunobu and Whitehead fail to disclose or suggest a conductive material patterned to form a plurality of adjacent heat spreading elements, each heat spreading element having a first electrical connection pad and a second electrical connection pad; a plurality of mounting vias extending through the insulative material, wherein each mounting via exposes the first electrical connection pad of an associated heat spreading element. The numerals 48 and 49 in Figures 4-7 of Wada Kazunobu are copper wires for conducting electricity. Wada Kazunobu does not disclose or suggest that the wires are for conducting heat. Moreover, there is no suggestion in either Wada Kazunobu or Whitehead to reconfigure the wires 48 and 49 into heat spreading elements, each with a first and second electrical connection pad. Since neither reference discloses or suggests flexible circuits comprising a plurality of adjacent heat spreading elements, each heat spreading element having a first electrical connection pad and a second electrical connection pad as claimed, claim 35 is not obvious.

Claims 36, 37, and 39 depend on and further limit claim 35, therefore, they are not obvious for at least the same reasons.

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III. New Claims

New claims 40 and 42 are directed at an illumination assembly wherein the patterned electrically conductive layer comprises an array of spaced apart heat spreading elements. The cited references fail to disclose or suggest this feature.

New claim 41 is directed at an illumination assembly wherein each LED die is electrically connected to at least two adjacent heat spreading elements. New claim 43 is directed at an illumination assembly wherein each light emitting element is electrically connected to at least two adjacent spaced apart heat spreading elements. The cited references fail to disclose or suggest these features.

In view of the above amendments and remarks, Applicants respectfully request a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

Respectfully submitted,

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